

## **CLAIMS**

1. A cushion device comprising:

a substantially flexible hollow, enclosed shell having a predetermined volume, a predetermined expanded shape or a substantial uprightness, and being capable of containing gas and/or liquid without substantial leakage, and

at least one port in said shell for ingress and egress of liquid or gas into or from said shell, said port or ports each provided with closure means which can substantially prevent entry and escape of gas or liquid from said shell,

wherein said shell is capable of maintaining the predetermined volume, the predetermined expanded shape or the substantial uprightness when the shell is open to ambient liquid or gas pressure.

2. The cushion device of claim 1 wherein said shell is adapted to maintain the predetermined volume, the predetermined expanded shape or the substantial uprightness due to its inherent property or properties selected from the group consisting of firmness, rigidity or stiffness which can result from material compounding, structural design selected from the group consisting of 'sea shell with ribs' structure or foraminous structure, or the like.

3. The cushion device according to claim 1, comprising spacing means within said shell for maintaining said predetermined volume, predetermined expanded shape or substantial uprightness.

4. The cushion device according to claim 3, wherein said spacing means comprises one or a plurality of substantially hollow or foraminous structures selected from the group consisting of cylinders, cages, tubes, foam shapes, voluminous fiber masses made of substantially flexible material such as a polymer material, the structures allowing sufficiently free flow of gas or liquid between the outside and the inside of said hollow structures.

5. The cushion device of claim 3 wherein said spacing means are partly or entirely detached from said shell.

6. The cushion device according to claim 1, wherein said shell is a substantially flexible hollow or foraminous structure made of sufficiently flexible polymer material or materials through a technology selected from the group consisting of heat sealing, welding, adhesive bounding, blow molding, rotational molding, vacuum forming, or injection molding.

7. The cushion device according to claim 1, wherein said port or ports are formed integrally with said shell through a technology selected from the group consisting of blow molding, rotational molding, vacuum forming, or injection molding.

8. The cushion device according to claim 1, wherein said shell defines two opposed large surfaces and said port or ports are located on the large surface or surfaces of said shell to facilitate filling the shell with liquid when the shell is placed flat on one of its large surfaces.

9. The cushion device according to claim 1, for use in a gas or liquid or a mixed gas-liquid ambience or the like, comprising:

a substantially flexible hollow, enclosed shell having a predetermined volume, a predetermined expanded shape or a substantial uprightness, and being capable of containing gas and/or liquid without substantial leakage, and

a plurality of ports with at least one substantially near one edge and at least one substantially near the opposite edge of said shell that can allow gas or liquid fluid to enter into or to escape from said shell, said ports each being provided with closure means which can substantially prevent entry and escape of gas or liquid from the shell,

and wherein said shell is capable of maintaining the predetermined volume, the predetermined expanded shape or the substantial uprightness when the shell is open to ambient gas or liquid pressure.

10. The cushion device of claim 9 wherein said shell is adapted to maintain the predetermined volume, the predetermined expanded shape or the substantial uprightness due to its inherent property or properties selected from the group consisting of firmness, rigidity or stiffness which can result from material compounding, structural design selected

from the group consisting of 'sea shell with ribs' structure or foraminous structure, or the like.

11. The cushion device according to claim 9, wherein said shell comprises a spacing means for maintaining the predetermined volume, the predetermined expanded shape or the substantial uprightness.

12. The cushion device according to claim 11, wherein said spacing means comprises one or a plurality of substantially hollow or foraminous structures selected from the group consisting of cylinders, cages, tubes, foam shapes, voluminous fiber masses made of a substantially flexible material or materials selected from the group consisting of polymer materials, the structures allowing sufficiently free flow of gas or liquid between the outside and the inside of said hollow structures.

13. The cushion device of claim 11 wherein said spacing means are partly or entirely detached from said shell.

14. The cushion device according to claim 9, wherein said shell is a substantially flexible hollow or foraminous structure made of sufficiently flexible polymer material or materials through a technology selected from the group consisting of heat sealing, welding, adhesive bounding, blow molding, rotational molding, vacuum forming, or injection molding.

15. The cushion device according to claim 9, wherein said ports are formed integrally with said shell through a technology selected from the group consisting of blow molding, rotational molding, vacuum forming, or injection molding.

16. The cushion device according to claim 9 wherein said shell defines two opposed large surfaces and said ports are located on the large surface or surfaces of said shell to facilitate filling the shell with liquid when the shell is placed flat on one of its large surfaces with said ports facing upwards.

17. A method for providing cushioning support under liquid in a confined basin or the like, comprising the steps of:

- a. providing said device, in the form of a flexible hollow shell which is such as to maintain a predetermined volume, a predetermined expanded shape or a substantial uprightness when its interior is open to ambient gas or liquid pressure, said shell having a plurality of gas or liquid control ports each provided with a closure means;
- b. placing said device at the bottom of said basin when said basin is empty, with at least one of said plurality of gas or liquid control ports near the upper end of said shell and at least one of said plurality of gas or liquid control ports near the lower end of said shell, and with at least one upper and at least one lower said ports being kept open,
- c. filling said basin with liquid whereby said liquid enters said device automatically and simultaneously through at least one said port substantially near the lower end of said device, while gas is pushed out of said device through at least one said port substantially near the upper end of said device, and
- d. closing all said ports on said device once said basin is filled to a desired level, whereby said cushion device is filled and ready for use to provide cushioning support.

18. A method for providing cushioning support under liquid in a confined basin or the like, comprising the steps of:

- a. providing said device, in the form of a flexible hollow shell which is such as to maintain a predetermined volume, a predetermined expanded shape or a substantial uprightness when its interior is open to ambient gas or liquid pressure, said shell having a plurality of gas or liquid control ports each provided with a closure means;
- b. filling said basin with liquid to a desired level;
- c. placing said device into said basin sufficiently vertically, with at least one of said plurality of gas or liquid control ports near the upper end of said shell and

at least one of said plurality of gas or liquid control ports near the lower end of said shell, and with at least one upper and at least one lower said ports being kept open, whereby said liquid enters said device automatically and simultaneously through at least one said port near the lower end of said device, while gas is pushed out of said device through at least one said port near the upper end of said device;

- d. closing all said ports on said device once said device is submerged under said liquid and is filled with said liquid, whereby said cushion device is ready for use to provide cushioning support.

19. A method for providing fomentation or cryotherapy treatment, comprising the steps of:

- a. providing a cushion device comprising a substantially flexible hollow shell which has a predetermined volume, a predetermined expanded shape or a substantial uprightness when the interior of the shell is open to ambient pressure, said shell having one or a plurality of gas or liquid control ports each provided with a closure means;
- b. placing said device on an approximately horizontal surface, with at least one of said gas or fluid control ports open and facing upwards,
- c. filling said device with warm or cold liquid through said open port or ports,
- d. closing said port or ports on said device once said device is filled to a desired level, and
- e. applying said cushion device to a body part in need of fomentation or cryotherapy treatment.